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Setting A Safe Dose For Perchlorate

National Research Council report weighs in to settle conflict

By Cheryl Hogue



BLASTOFF

Perchlorate, which pollutes drinking water, was used in the fuel of the Minuteman missile.

Credit: COURTESY OF USAF

POLLUTION

A new study of perchlorate by the **National Research Council (NRC)** <<http://www.nationalacademies.org/nrc/>> sets a safe daily dose for human ingestion, which could help resolve an interagency conflict over a drinking water standard for the chemical.

Accompanying release of the report, however, are charges by a mainstream environmental group that the White House tried to exert undue influence on NRC's interpretations of the scientific evidence.

The safe dose, the NRC report says, is 0.7 µg per kg of body weight per day. The figure includes a safety factor to protect those people most vulnerable to perchlorate's effects: unborn children being carried by women who have iodide-deficient diets or whose bodies don't make

enough thyroid hormone. In contrast, **EPA** <<http://www.epa.gov>> 's dose estimate was 0.03 g per kg per day.

Perchlorate is a component of rocket fuel, and the ion taints drinking water in 35 states at levels of at least 4 ppb. The chemical can inhibit the uptake of iodide by the thyroid and thus may lower the amount of thyroid hormone in the body. Insufficient levels of this hormone can cause permanent neurological damage in children.

The Pentagon, **NASA** <<http://www.nasa.gov>> , the **Department of Energy** <<http://www.energy.gov>> , and defense contractors—who could face expensive cleanups of perchlorate contamination—objected vigorously when EPA proposed a 1-ppb limit for drinking water. The military suggested a limit of 200 ppb.


The report, prepared at the request of the U.S. government, criticizes EPA's decision to rely on laboratory animal tests to set a safe dose of perchlorate, rather than clinical studies of healthy adult volunteers.

The NRC report bases its safe daily dose estimate on human data, using the largest measured amount of perchlorate that did not interfere with iodide uptake by the thyroid. Inhibition of iodide uptake in the thyroid precedes but does not actually cause adverse health effects from perchlorate exposure, NRC says.

The Environmental Working Group and the Natural Resources Defense Council separately estimated how the NRC number would be used to set a drinking water standard. EWG says the standard would be no higher than 2.5 ppb, whereas NRDC suggests it could be between 1 and 4 ppb. The NRC report did not address that issue.

NRDC charges that the Pentagon, military contractors, and the White House collaborated to skew the NRC report to lower the costs of cleaning up perchlorate pollution. NRDC based its allegations on documents obtained under the Freedom of Information Act.

James J. Reisa, who oversaw production of the report for NRC, tells C&EN that neither the NRC staff nor the panel of experts it appointed was swayed by outsiders.

[\(/index.html\)](#)  We are fiercely independent in our decision-making process. I can't imagine anyone in the government who would be stupid enough to try to influence us inappropriately," Reisa says. <https://www.acs.org/bin/acs/ssso/login>

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